

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Application of	PIRIM	Confirmation No.	9812
Patent No.	7,043,465 B2	Group:	2121
Issue Date:	May 9, 2006	Examiner:	HOLMES, MICHAEL B
Application No.	09/876,929	Docket No.	8042-7
Filing Date:	June 8, 2001		
For:	METHOD AND DEVICE FOR PERCEPTION OF AN OBJECT BY ITS SHAPE, ITS SIZE AND/OR ITS ORIENTATION		

REQUEST FOR CERTIFICATE OF CORRECTION

ATTN: Certificate of Corrections Branch
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir or Madam:

On behalf of Image Processing Technologies LLC, the assignee of record, the undersigned hereby requests that a Certificate of Correction pursuant to 37 C.F.R. §§ 1.322, 1.323 be issued on the above-entitled patent. The correction is indicated in appropriate form on attached Form PTO/SB/44.

The requested corrections either (i) relate to perfecting a delayed priority claim to FR 00 02355; (ii) relate to typographical errors which were made by the applicant; or (iii) relate to the omission of Appendix A from the specification by the United States Patent and Trademark Office (USPTO). All of the requested corrections do not constitute new matter, do not affect the scope of any claim and do not require reexamination.

With respect to the requested correction of the priority claim, MPEP § 201.16 states: “a certificate of correction under 35 U.S.C. 255 and 37 CFR 1.323 may be requested and issued in order to perfect a claim for foreign priority benefit in a patented continuing application if the requirements of 35 USC 119(a)-(d) or (f) had been satisfied in the parent application prior to the issuance of the patent and the requirements of 37 CFR 1.55(a) are met.” MPEP § 201.16.

U.S. Patent No. 7,043,465 is a continuation-in-part of U.S. application no. 09/792,436, filed on February 23, 2001, now U.S. Patent No. 6,959,293 (hereinafter, “Parent Application”). This domestic priority claim is included on the first page of the patent and in the first paragraph of the specification of the patent. Assignee notes that the domestic priority claim to the Parent Application is also referred to under the “continuity data” tab on PAIR for U.S. Patent No. 7,043,465. Additionally, Assignee submits that the priority claim to FR 00 02355 was perfected in the Parent Application, and the priority claim to FR 00 02355 is identified under the “foreign priority” tab on PAIR for the Parent Application.¹ A copy of the cited documents is filed herewith. The requirements of 35 USC § 119(a)-(d) or (f) had been satisfied in the Parent Application prior to the issuance of the patent and the requirements of 37 CFR § 1.55(a) are met; therefore a Certificate of Correction is a valid means for amending U.S. Patent No. 7,043,465 to include the delayed foreign priority claim. *See* MPEP § 201.16.

Additionally, a petition for an unintentionally delayed foreign priority claim under 37 CFR 1.55(c) is filed herewith.

With respect to the requested correction to add Appendix A to the specification, although listed as “Other” under Accompanying Application Parts on the application transmittal, applicant submitted Appendix A as part of the specification for application (09/876,929) on June 8, 2001. The seven-page Appendix was included by applicant after page 38 of the specification and

¹ Although the foreign priority claim was perfected during prosecution of the Parent Application, the claim was inadvertently omitted from the face of the issued patent. Assignee has concurrently filed a Request for Certificate of Correction for the Parent Application (U.S. Patent No. 6,959,293), including a description and copies of relevant documents demonstrating that the priority claim to FR 00 02355 is clearly disclosed by the records of the USPTO.

before the claims. The text of the specification also refers to "Appendix A, which is provided as an integral part of this document," making it clear that the Appendix is intended to be part of the specification. Col. 22, ln. 33-34. Subsequently, Appendix A was omitted from the issued patent. Assignee submits that Appendix A is clearly disclosed by the records of the USPTO as part of the specification; therefore a Certificate of Correction is a valid means for amending the issued patent to include the Appendix A mistakenly omitted by the USPTO.

For the foregoing reasons, it is respectfully requested that the Commissioner issue a Certificate of Correction making the aforementioned requested corrections. Please contact the undersigned if clarification is required.

Credit card payment in the amount of \$100.00 accompanies this Request. Although no additional fees are believed to be due, the Commissioner for Patents is hereby authorized to charge any underpayment in fees to Deposit Account No. 14-1437. In the event that the Office requires additional information regarding this Request, please contact the undersigned representative Karen Kline (direct line: 561-847-7814).

Respectfully submitted,

NOVAK DRUCE + QUIGG LLP

Date: August 19, 2010

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CITED DOCUMENTS



US007043465B2

(12) **United States Patent**
Pirim(10) Patent No.: **US 7,043,465 B2**
(45) Date of Patent: **May 9, 2006**(54) **METHOD AND DEVICE FOR PERCEPTION OF AN OBJECT BY ITS SHAPE, ITS SIZE AND/OR ITS ORIENTATION**JP 0 380 659 A1 8/1990
JP 0 394 959 A2 10/1990
FR 2 611 063 A1 8/1988(75) Inventor: **Patrick Pirim, Paris (FR)**

(Continued)

(73) Assignee: **Holding B.E.V.S.A., Luxembourg (LU)****OTHER PUBLICATIONS**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 652 days.

Kenichi Yamada, et al. "Image Understanding Based on Edge Histogram Method for Rear-End Collision Avoidance System"; Vehicle Navigation & Information Systems Conference Proceedings; (1994), pp. 445-450 published Aug. 31, 1994; XP 000641348.

(21) Appl. No.: **09/876,929**(22) Filed: **Jun. 8, 2001**

(Continued)

(65) **Prior Publication Data**

US 2002/0120594 A1 Aug. 29, 2002

Related U.S. Application Data

(63) Continuation-in-part of application No. 09/792,436, filed on Feb. 23, 2001.

(30) **Foreign Application Priority Data**

Feb. 23, 2001 (FR) 01 02539

(51) Int. Cl. **G06F 15/18** (2006-01)(52) U.S. Cl. **706/20**(58) Field of Classification Search **706/20**
See application file for complete search history.(56) **References Cited****U.S. PATENT DOCUMENTS**5,008,946 A * 4/1991 Ando 382/104
5,088,488 A 2/1992 Markowitz et al.
5,109,425 A 4/1992 Lawton
5,163,095 A 11/1992 Kosaka

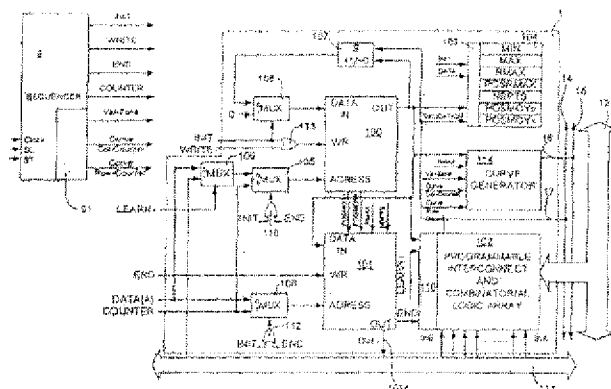
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FOREIGN PATENT DOCUMENTS

EP 0 046 110 A1 2/1982

40 Claims, 39 Drawing Sheets(57) **ABSTRACT**

Systems and methods for localizing a shape in a space represented by pixel data forming a multidimensional space i, j , evolving with time, and represented at a succession of instants T , wherein the data is associated with a temporal parameter A, B, \dots in the form of digital signals $DATA(A), DATA(B), \dots$ composed of a sequence A_{ijm}, B_{ijm}, \dots of binary numbers of n bits associated with synchronization signals defining the instant T of the space and the position i, j in this space, at which the signals A_{ijm}, B_{ijm}, \dots were received. In one embodiment, a) a region of interest of the space is perceived in relation to a statistic criterion applied to a temporal parameter, b) the main region thus perceived is deactivated, c) repeating a) and b) in order to perceive other regions of interest inside a non-deactivated space region, d) the procedure is stopped when a remaining region, non-deactivated, in the space does not provide a region of interest corresponding to the statistic criterion, e) a counter is incremented for each consecutive valid frame for each region of interest thus perceived, and f) for each region of interest thus perceived, the center of gravity is stored.



METHOD AND DEVICE FOR PERCEPTION OF AN OBJECT BY ITS SHAPE, ITS SIZE AND/OR ITS ORIENTATION

CROSS-REFERENCES TO RELATED APPLICATIONS

This application is a continuation-in-part of, and claims priority from, U.S. patent application Ser. No. 09/792,436, entitled "METHOD AND DEVICE FOR AUTOMATIC VISUAL PERCEPTION," filed Feb. 23, 2001, which is hereby incorporated by reference in its entirety for all purposes. This application also claims priority from French Patent Application No. 01 02539, filed Feb. 23, 2001, which is hereby incorporated by reference in its entirety for all purposes.

BACKGROUND OF THE INVENTION

The invention relates generally to methods and devices for automatic visual perception, and more particularly to methods and devices for processing image signals using two or more histogram calculation units to localize one or more objects in an image signal using one or more characteristics of an object such as the shape, size and orientation of the object. Such devices can be termed an electronic spatio-temporal neuron, and are particularly useful for image processing, but may also be used for processing other signals, such as audio signals. The techniques of the present invention are also particularly useful for tracking one or more objects in real time.

Methods and devices are already known that have suggested statistical analysis of the points or pixels of a digital video signal coming from an observation system, for the realization of efficient devices capable of operating in real time. PCT WO 98/05002 relates to one such technique.

It is desirable to provide devices including combined data processing units of a similar nature, each addressing a particular parameter extracted from the video signal. In particular, it is desirable to provide devices including multiple units for calculating histograms, or electronic spatio-temporal neuron STN, each processing a DATA(A), . . . by a function (f,g) in order to generate individually an output value S, wherein these output values form together a feedback R available on a bus.

BRIEF SUMMARY OF THE INVENTION

It is thus that the present invention provides systems and methods implementing multiple histogram calculation units for the calculation of histograms or electronic spatio-temporal neuron STN, each processing a DATA(A), . . . by a function (f,g) in order to generate individually an output value S, wherein these output values form together a feedback R available on a bus 110. At the same time, each of these histogram calculation units feeds and updates an analysis output register reg_a, supplying statistical information on the corresponding parameter. The selection of the parameter processed by each histogram calculation unit, the content of the analysis output register and the function (f,g) that the histogram calculation unit applies, are determined by API (Application Program Interface) software.

The present invention also provides a method for perception of an object using characteristics, such as its shape, its size and/or its orientation, using a device composed of a set of histogram calculation units.

Using the techniques of the present invention, a general outline of a moving object is determined with respect to a

relatively stable background, then inside this outline, elements that are characterized by their tone, color, relative position, etc. are determined

The present invention provides for multiple applications involving the perception of an object. Such applications can be developed, either from a previous formalization having underlined the significant characteristics of the object or based on a learning function by examining the scenery in which the object in question is present, wherein such a device provides for automatic extraction of the characteristic parameters of the object.

According to the present invention:

- a) a region of interest of the space is perceived in relation to a statistic criterion applied to a temporal parameter,
- b) the main region thus perceived is deactivated,
- c) a) and b) are repeated in order to perceive other regions of interest inside a non-deactivated space region,
- d) the procedure is stopped when a remaining region, non-deactivated, in the space does not provide a region of interest corresponding to the statistic criterion,
- e) a counter is incremented by consecutive valid frame, for each region of interest thus perceived, the center of gravity of its scatter chart,
- f) for each region of interest thus perceived, the center of gravity of its scatter chart is captured.

This invention also relates to the characteristics as will be evident by the following description and which should be considered individually or in all their possible technical combinations:

- a counter is associated with each region of interest, and the counter value is incremented by one unit at each of the successive frames from which the said region of interest is perceived, whereas the value of this counted is reset to the first frame for which the said region is not perceived any longer,
- the position of the center of gravity of the points making up a region of interest are stored in an associated memory thereby enabling its identification,
- the region of interest is validated for one value of its associated counter that is greater than 1,
- the validated region is perceived by its center of gravity, the orientation of its projection axes and the sizes of the associated frame,
- inside the region of interest, one or several secondary regions defined by one or several selection criteria are registered,
- a secondary region plays the part of the region of interest, which leads to registering tertiary regions,
- localization of the secondary regions is used for tracking the movements of the main region,
- the temporal parameter is velocity,
- the temporal parameter is a luminance level,
- the temporal parameter is a color,
- the temporal parameter is spatial resolution,
- the temporal parameter is field depth,
- the registered region is defined with respect to a mark selected among several marks of different orientations,
- the relative positions of the centers of gravity of the scatter charts of the regions of interest registered serve for controlling the shape of the object perceived,
- the shape is a human face,
- the main region is the face and secondary regions are selected among the set encompassing the eyes, the mouth, the eyebrows and the nose.



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		Published Documents	Address & Attorney/Agent

Parent Continuity Data

Description	Parent Number	Parent Filing or 371(c) Date	Parent Status	Patent Number
This application is a Continuation in part of	097702,036	02-23-2001	Patented	6,959,493

Child Continuity Data

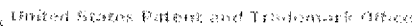
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